SUPPORT FOR THE AMENDMENT

Support for the amendment to the specification is found on page 36, line 13, 14-15, 19, 20 and 24 where testing on a slide glass is fully discussed. Support for the amendment to claim 8 is found on page 9, lines 3-4, page 9, lines 10-13, page 6, lines 24-26 and page 11, line 16 of the specification. Support for the amendment to claim 10 is found on page 10, lines 2-3 of the specification. Support for claim 12 is found in example 2 in which ease of cleaning and antifouling are tested on ceramic tile and on a toilet bowl. In addition, the attached product literature from TOTO identify **a glazing step** in the preparation of toilet fixtures, such that applicants' disclosure of antifouling of ceramic tiles and toilet bowls would lead one of skill in the art to believe that applicants were in possession of the use of an antifouling detergent on a glazed surface of a toilet bowl. Support for claim 13 is found in claim 8 as originally presented. No new matter would be added to this application by entry of this amendment.

Upon entry of the amendment claims 1-4, 8 and 10-13 will now be active in this application with claims 8, and 10-13 being under active consideration.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to a method of treating a hard surface with an antifouling detergent.

Applicants wish to thank examiner DelCotto for the helpful and courteous discussion held with their U.S. representative on July 11, 2008. At that time, applicants' U.S. representative argued the differences between preventing corrosion of the interior surface of a metal pipe which is exposed to a corrosive liquid containing a corrosion inhibitor and treatment of a surface of a toilet bowl which is not immersed in a liquid which is corrosive to metal. The following is intended to expand upon the discussion with the examiner.

Hard surface cleansing methods such as of bathroom sinks and toilet bowls, have not always excelled in providing antifouling effects. Problems with the degree of antifouling effect fuels the quest for improved antifouling detergent compositions.

The claimed invention addresses this problem by providing a hard surface treating method comprising treating a hard surface of a toilet bowl with an antifouling detergent comprising a polymer comprising 30-90 mol% of a monomer (A) derived from formula (1) or (2)[1], a monomer (B)having $-SO_2-$ groups, and a monomer (C) in an (B)/(A) ratio of 0.01 to 1 and (C)/(A) ratio of 0.5 to 1 and a cationic surfactant. Applicants have discovered that such a composition provides for an effective antifouling treatment method of a toilet bowl surface. Such a method is nowhere disclosed or suggested in the cited references of record.

The rejection of claims 8, 10 and 11 under 35 U.S.C. §103 (a) over Jeschke et al. U.S. 6,251,849 or Aubay et al. U.S. 6,593,288 both in view of Harada et al. U.S. 3,920,392 and Aubay et al. U.S. 6,703,358 or Pucci et al U.S. 5,872,088 is respectfully traversed.

None of the cited references disclose or suggest an anti-fouling method using a polymer as claimed.

[1] Applicants note that monomer (A) is included the monomer which is polymerized from formulas (1) or (2) into units having a cyclic structure, such as described in Harada et al.

No Suggestion To Use A Sulfone Containing Polymer In An Anti-Fouling Method

The examiner has cited each of Jeschke et al. and Aubay et al. '228 for methods of treating a hard surface with a polymer.

None of the polymers of the cited reference contain sulfone groups ($R\text{-}SO_2\text{-}R$).

Jeschke et al. merely describes a cationic polymer containing a monomer of formula I which is used as a soil release compound in cleaners for a hard surface (column 1, line 66 through column 2, line 17). Additional monomer are described at column 2, lines 25-44 as unsaturated monocarboxylic acids, olefins, alkyl esters of unsaturated carboxylic acids, substituted aromatic compounds containing unsaturated groups and heterocyclic compounds. There is no suggestion of the claimed polymer including monomers having sulfone groups.

Aubay et al. '228 describes a water-soluble/dispersible copolymer comprising a monomer (a) of a dialkenyl ammonium salt, monomer (b) of a hydrophilic monomer having a function of acidic nature; and a monomer (c) a hydrophilic monomer containing ethylenic unsaturation which at an (a)/(b) ratio of between 60/40 and 5/95 give a hard surface hydrophilic properties (column 3, lines 9-10). Monomers (b) are described as water-soluble unsaturated or anhydrides of $C_{3\text{-}8}$ carboxylic, sulfonic ($R\text{-}SO_3H$), sulfuric ($R\text{-}SO_4H$), phosphonic, or phosphoric acids (column 3, lines 62-65). Monomers (c) are described as acrylamide, vinyl alcohol, alkyl esters of (meth)acrylic acid, hydroxyalkyl esters of (meth)acrylic acid and polyalkoxylated esters of (meth)acrylic acid (column 4, lines 14-21). There is no suggestion of the claimed polymer including monomers having sulfone groups.

The official action recognizes this deficiency on page 7

"Jeschke et al or Aubay et al do not teach the specific polymer as recited by the instant claims or a method for treating a toilet bowl surface using a composition containing the specific cationic polymer, surfactant, and the other requisite components."

In contrast, the claimed invention is directed to a toilet hard surface treatment method using a polymer comprising 30-90 mol% of a monomer (A) derived from formula (1) or (2), a monomer (B) represented by $-SO_2-$, and a monomer (C) at a molar ratio of monomer B to A of 0.01 to 1 and a molar ratio of monomer C to A of 0.05 to 1 in conjunction with a cationic surfactant. Applicants note that the claims have been amended to limit the content of monomer (A) to 30-90 mol%, the (C)/(A) ratio and as well as to recite a smaller group of monomer (C) components and a cationic surfactant. As neither of the primary references disclose or suggest a sulfone group ($R-SO_2-R$) containing polymer the claimed invention is clearly not rendered obvious by these references.

The examiner has cited Harada et al. for a disclosure of a sulfone containing polymer used as a **corrosion inhibitor for metal** surfaces which is **added to a corrosive medium**.

This invention also provides a method for inhibiting the corrosion of a metal which comprises adding a corrosion-inhibitorily effective amount or said metal corrosion inhibitor to a corrosive medium with which the metal contacts." (column 3, line 66 through column 4, line 2).

The compounds act as *per se* metal corrosion inhibitors (i.e. rust preventers). Accordingly, the secondary reference does not describe hard surface treatment of a toilet bowl surface but rather describe a water treatment which reduces the corrosive effects of the liquid.

The references which describe hard surface treatment, Jeschke et al. and Aubay et al. do not suggest sulfone groups while the secondary reference of Harada et al. fail to describe a hard surface treatment but rather a water treatment. Water is not a hard surface.

The examiner's rejection appears to be based on the belief that since Harada et al. describe SO_2 as "a very easily copolymerizable monomer which provides corrosion inhibiting properties" there would be motivation to include such a monomer in either of the polymers of Jeschke et al. or Aubay et al. '288.

Applicants respectfully submit that the ease of incorporation of an $-SO_2-$ monomer, fails to provide motivation to do so.

> The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art *KSR International Co. v. Teleflex Inc.* 82 USPQ2d 1385, 1396 (2007) M.P.E.P. § 2143.01

Accordingly, any assertions of obviousness based on a combination of references must be predicated on a result which is **predictable** to those of ordinary skill in the art. While the examiner has relied on an assertion of the predicatability of being able to combine the monomers, the issue as to obviousness is based on the predictability of **combining the functions** of the two polymers. There is no overlap between the hard surface cleaning of the cited primary references and the water treatment of Harada.

In the present case, the primary references are cationic polymers which provide a soil release effect in a **surface treatment** (column 1, lines 7-9 of Jeschke et al. and column 1, lines 9-14 of Aubay et al.). In each case the soil release properties are tested by **treating a surface** with solution followed by **drying** on the substrate surface (column 7, lines 10-14 of Jeschke et al. and column 15, lines 21-46 of Aubay et al.). Thus, each of these hard surface treatments recite steps of **applying and drying** of the surface in order to provide a soil release effect **to the surface**.

The acid corrosion inhibiting polymer of Harada et al. functions in a completely different manner than that of Jeschke et al. or Aubay et al.

Harada et al. identify the main causes of corrosion of metals in industrial water as oxygen and carbon dioxide dissolved **in water** and in the case of pickling **solutions**, corrosion is caused by acids (column 5, lines 49-56). Thus the acid corrosion inhibiting polymer of Harada et al. is **a water treatment agent**.

Thus, the two technologies differ in their basic mode of use. The primary reference treat a surface which is then dried, while the secondary reference provides continued corrosion inhibition by treating an industrial water. In view of the fundamentally different uses of the materials of the primary reference and the secondary reference there could be not expectation of conferring corrosion resistance to the hard surface treatments of Jeschke et al. or Aubay et al. by incorporating the sulfone monomer of the water treatment polymers of Harada et al.. The different uses would preclude any expectation of providing corrosion resistance to a toilet bowl surface.

Further, not only do the references different in the way the polymer is used, but the nature of corrosion inhibition is fundamentally different. As noted above, Harada et al. prevents corrosion of **a metal surface** which is in contact with a corrosive liquid. Jeschke et al. and Aubay et al. '288 treat a surface of a toilet bowl, which is not a metal surface subject to corrosion. A toilet bowl surface is not a metal surface subject to corrosion, but is typically a glazed surface. Applicants note that claim 12 has been added to describe the toilet bowl surface as glazed. As a toilet bowl surface is not a metal surface subject to corrosion, the claimed invention is not rendered obvious by the cited combination of references.

No Suggestion of -SO_2- Being Less Than The Major Component of Ternary Monomer Mixture

Harada identifies a maximum amount of sulfur dioxide as a molar fraction of 0.5, preferably a molar fraction of 0.3 to 0.5. Thus the polymer may contain no more than 50 mol% of -SO_2-, preferably 30-50 mol%. This is clearly evident from the numerous binary mixtures appearing at columns 7-10. However, in all of the ternary mixtures, -SO_2- is the primary component, accounting for 50 mol% of the polymer. Thus, in a ternary mixture, the

content of -SO_2-, is disclosed as exceeding that of the content of nitrogen containing monomer.

In contrast, the claimed invention is directed to a method is which the polymer contains -SO_2- (B) and a nitrogen containing monomer (A) in a ratio of 0.1 to 1. Thus, the content of -SO_2- can not exceed that of the nitrogen containing monomer (A). As the cited reference always illustrates -SO_2- as the primary monomer, the claimed (B)/(A) ratio of 0.1 to 1 is not rendered obvious by the reference.

No Disclosure of Anionic Groups As Monomer (C) In Combination With Monomers (A) and (B)

Harada describes at column 4, lines 1-44, monomers (A)-(H) as copolymerizable with the -SO_2-. None of these monomers are an anionic group as claimed for monomer unit C. Thus, the only reference which identifies -SO_2- units does so in the absence of the claimed anionic monomer units C.

In contrast, the claimed invention is directed to a copolymer based on units (A), (B) and (C) in which monomer (C) has been amended to require the presence of anionic groups. As the cited reference for -SO_2- fails to described anionic groups as monomer (C), the claimed invention can not be rendered obvious by this combination of references.

No Suggestion OF Improving Ease Of Detergency By Selection Of Cationic Surfactant

Further more, applicants observe improved ease of detergency by combining the polymer with a cationic surfactant.

The examiner's attention is directed to examples 2-8, 2-9 and 2-10 in Table 1 on page 31 of the specification. Example 2-9 containing 5.0 wt. % of dodecyldimethyamine oxide,

not a cationic surfactant, demonstrated an ease of detergency of only 4.4. In contrast, example 2-8 containing only 3.5 wt. % of a combination of octyldimethylbenzylammonium chloride and N-lauroylaminopropyl-N,N-dimethyl-N-carboxymethyl ammonium betaine cationic surfactants demonstrated an ease of detergency of 4.8. Likewise, example 2-10 containing 3.0 wt. % of N-lauroylaminopropyl-N,N-dimethyl-N-carboxymethyl ammonium betaine as a cationic surfactant demonstrated an ease of detergency of 4.6. Thus, by inclusion of a cationic surfactant, applicants are able to improve the ease of detergency for the composition. Applicants note that the claims have been amended to require the presence of a cationic surfactant. In a similar fashion, the data in Tables 3 and 4, examples 4 and 5 demonstrate increased ease of detergency for the combination of anti-fouling detergent polymer containing an -SO_2-unit and cationic surfactant.

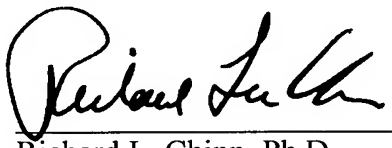
In view of the deficiencies of the cited references to suggest the use of a sulfone unit containing polymer in a method of treating a hard surface of a toilet bowl and the improved ease of detergency by combining with a cationic surfactant, the claimed invention is not rendered obvious and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

The rejection of claim 12 under 35 U.S.C. §112, second paragraph as been obviated by amendment as suggested by the examiner. In view of applicants' amendment, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Richard L. Chinn, Ph.D.
Registration No. 34,305

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)
NFO/JN:SJH